**What is Claimed:**

1. Phase-locked loop circuit comprising:

a voltage-controlled oscillator which includes at least one resonator circuit for driving the oscillator,

a phase-locked loop including frequency control means for controlling the output frequency of said oscillator, such that during operation said resonator circuit runs at a resonator frequency to drive said oscillator at an oscillator output frequency which is an integer multiple of the resonator frequency,

wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop, in that the resonator circuit includes at least one adjustable component to control the resonator frequency and in that the phase-locked loop frequency control means are coupled to the resonator circuit for controlling the resonator frequency.

2. Phase-locked loop circuit according to claim 1, wherein the voltage-controlled oscillator comprises a push-push circuit whose operating frequency is determined by a pair of resonator circuits and in that the frequency control means are coupled into at least one of said pair of resonator circuits.

3. Phase-locked loop circuit according to claim 2, wherein the push-push circuit comprises a pair of substantially identical active devices being coupled to said resonator circuits, and in that the frequency control means comprise a phase detector which is capable of generating a output signal which is fed back to the resonator circuits to control said active devices.

4. Phase-locked loop circuit according to claim 3, wherein the active devices are field effect transistors.

5. Phase-locked loop circuit according to claim 3, wherein the resonator circuits comprise LC-circuits with at least one variable capacitor in said LC-circuits being controlled by the frequency control means.

6. Phase-locked loop circuit according to claim 5, wherein the LC-circuits comprises at least two variable capacitors each.

7. Phase-locked loop circuit according to claim 3, wherein the active devices are each coupled in series with an inductor.

8. Phase-locked loop circuit according to claim 2, wherein the resonator circuits are connected to a fixed potential via a load resistor.

9. Phase-locked loop circuit according to claim 1, wherein the voltage-controlled oscillator comprises integrated components being integrated in a single semiconductor body.